



210 East Capitol Street, Suite 1050
 Jackson, MS 39201
 tel: 601.966.0359 (direct)
 601.960.6440 (office)

August 28, 2014

TO ALL PLAN HOLDERS

REFERENCE: ADDENDUM NO. 1
 SOUTH WASTEWATER TREATMENT PLANT
 PROCESS MECHANICAL AND ELECTRICAL UPGRADES
 MERIDIAN, MISSISSIPPI

Planholders:

Attached is **Addendum No. 1**, dated August 28, 2014, for the above referenced project. All of the provisions contained in the Contract Documents, Technical Specifications, and Construction Drawings shall remain in effect, except as outlined below and in the attached sheets.

Plan Holders are requested to sign and date this form in the spaces provided below and email a scan of this sheet to CDM Smith, ATTN: Matthew Horton, to verify receipt of this addendum. Email address is hortonmr@cdmsmith.com.

Sincerely,

Matthew R. Horton, PE
 Project Engineer

Attachments: Addendum No. 1

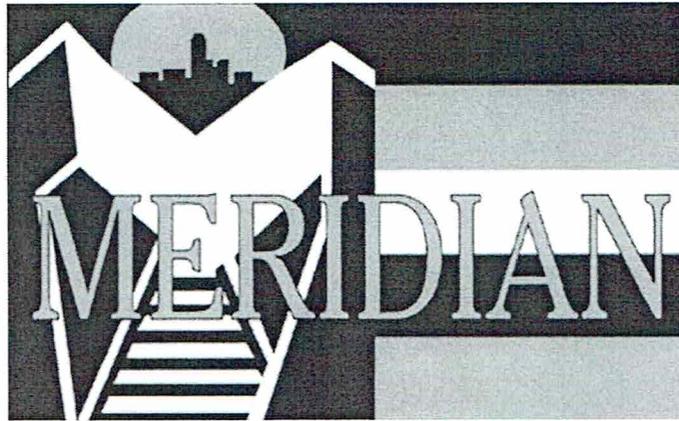
VERIFICATION OF RECEIPT

NAME: _____

COMPANY: _____

DATE: _____





**CITY OF MERIDIAN, MS
PUBLIC WORKS DEPARTMENT**

8/28/2014

E-MAIL ADDENDUM NO. 1

**SOUTH WASTEWATER TREATMENT PLANT
PROCESS MECHANICAL AND ELECTRICAL UPGRADES**

The following revisions shall be incorporated in and take precedence over any conflicting part of the original Contract Document:

CONTRACT DOCUMENTS:

1. Section 00500, Agreement

In Article 1. Work, DELETE entire second paragraph and REPLACE with following:

“The Contract Work consists of modifications to existing process pump equipment by replacement/rebuild of all existing process mechanical pumps located on the 4 MGD and 9 MGD trains; modifications to Blower Building including installation of two new turbocompressors, air piping, and piping components and DO control system; replacement of 9 MGD aeration header piping system; modifications to Digesters by installation of one new turbocompressor, air piping, and piping components in Digester Building and replacement of coarse bubble diffuser system; modifications to NPW Pump Room including installation of hydro-pneumatic booster pumping system; modification/upgrade of Plant’s electrical equipment; and any additional modifications, demolition, solids removal from treatment basins, and other work incidental to the project, as shown on the project Drawings.”

2. Section 11371, Integrally-Geared Single-Stage Centrifugal Turbocompressors – Aeration

In Paragraph 2.15.E, DELETE entire sentence and REPLACE with “The Basis of Design Manufacturer for the valve/actuator shall be Rotork.”

In Paragraph 2.17.C, DELETE entire sentence and REPLACE with “The Basis of Design Manufacturer for the valve shall be Titan.”

In Paragraph 2.20.H, DELETE “20” and replace with “40”.

DELETE entire Paragraph 2.21.F.

In Paragraph 2.21, RENAME existing line “G.” to line “F.”.

At the end of Paragraph 2.22.K.2, ADD “The Basis of Design Manufacturer for the modulating valve operator shall be Rexa. The Basis of Design Manufacturer for the ¼ - turn valve operator shall be Rotork.”

In Paragraph 2.22.K.4, DELETE entire sentence and REPLACE with “The Basis of Design Manufacturer for the air flow control valves shall be Bray.”

In Paragraph 2.22.L.4, DELETE entire sentence and REPLACE with “The Basis of Design Manufacturer for the air flow meters shall be Sierra.”

In Paragraph 2.22.M.4, DELETE entire sentence and REPLACE with “The Basis of Design Manufacturer for the DO probes and analyzers shall be Hach.”

3. Section 11372, Integrally-Geared Single-Stage Centrifugal Turbocompressors – Digesters

In Paragraph 2.15.E, DELETE entire sentence and REPLACE with “The Basis of Design Manufacturer for the valve/actuator shall be Rotork.”

In Paragraph 2.17.C, DELETE entire sentence and REPLACE with “The Basis of Design Manufacturer for the valve shall be Titan.”

In Paragraph 2.20.H, DELETE “20” and replace with “40”.

At the end of Paragraph 2.20.L, ADD “The Basis of Design Manufacturer for the level transmitters shall be Siemens or Endress+Hauser.”

DELETE entire Paragraph 2.21.F.

In Paragraph 2.21, RENAME existing line “G.” to line “F.”.

4. Section 11373, Multistage Centrifugal Blower – Digesters

For Paragraph 2.04, ADD the following:

- “F. Provide two (2) Manufacturer’s standard wafer type butterfly valve for field installation and wiring to the LCP by the Contractor , which shall open/close no faster than thirty (30) seconds.
- G. Provide two (2) Manufacturer’s standard level transmitters for field installation and wiring to the LCP by the Contractor. The Basis of Design Manufacturer for the level transmitters shall be Siemens or Endress+Hauser.”



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September 4, 2014

TO ALL PLAN HOLDERS

REFERENCE: ADDENDUM NO. 2
 SOUTH WASTEWATER TREATMENT PLANT
 PROCESS MECHANICAL AND ELECTRICAL UPGRADES
 MERIDIAN, MISSISSIPPI

Planholders:

Attached is **Addendum No. 2**, dated September 4, 2014, for the above referenced project. All of the provisions contained in the Contract Documents, Technical Specifications, and Construction Drawings shall remain in effect, except as outlined below and in the attached sheets.

Plan Holders are requested to sign and date this form in the spaces provided below and email a scan of this sheet to CDM Smith, ATTN: Matthew Horton, to verify receipt of this addendum. My email address is hortonmr@cdmsmith.com.

Sincerely,

Matthew R. Horton, PE
 Project Engineer

Attachments: Addendum No. 2

VERIFICATION OF RECEIPT

NAME: _____

COMPANY: _____

DATE: _____





**CITY OF MERIDIAN, MS
PUBLIC WORKS DEPARTMENT**

9/4/2014

E-MAIL ADDENDUM NO. 2

**SOUTH WASTEWATER TREATMENT PLANT
PROCESS MECHANICAL AND ELECTRICAL UPGRADES**

The following revisions shall be incorporated in and take precedence over any conflicting part of the original Contract Document:

CONTRACT DOCUMENTS:

1. Section 00020, Advertisement for Bids

In first Paragraph, DELETE “September 12th, 2014” and REPLACE with “October 3rd, 2014”.

2. Section 00100, Instructions to Bidders

In Paragraph 4.I, DELETE entire first sentence and REPLACE with “As it pertains to Section 13535, the Apparent Low Bidder shall submit a sludge disposal plan, in addition to the Bidding Documents, for review and approval by Solid Waste Policy, Planning, & Grants Branch of MDEQ prior to the Notice to Proceed date.”

3. Section 01600, Material and Equipment

DELETE, in its entirety, the duplicate Section 01600 (second Section 01600 within Contract Documents & Technical Specifications).

4. Section 13535, Sludge Cleanout of Treatment Basins

In Paragraph 1.07.A, DELETE entire first sentence and REPLACE with “The Apparent Low Bidder shall submit a sludge disposal plan, in addition to the Bidding Documents, for review and approval by Solid Waste Policy, Planning, & Grants Branch of MDEQ prior to the Notice to Proceed date.”

CONTRACT DRAWINGS:

- 1. Drawing MB-2 – 9 MGD Plant Primary Sludge Pump Modification Plan and Section**
CHANGE the pipe classification for the 4” discharge line FROM “CI” to “DI”.



210 East Capitol Street, Suite 1050
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tel: 601.966.0359 (direct)
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September 25, 2014

TO ALL PLAN HOLDERS

REFERENCE: ADDENDUM NO. 3
 SOUTH WASTEWATER TREATMENT PLANT
 PROCESS MECHANICAL AND ELECTRICAL UPGRADES
 MERIDIAN, MISSISSIPPI

Planholders:

Attached is **Addendum No. 3**, dated September 25, 2014, for the above referenced project. All of the provisions contained in the Contract Documents, Technical Specifications, and Construction Drawings shall remain in effect, except as outlined below and in the attached sheets.

Plan Holders are requested to sign and date this form in the spaces provided below and email a scan of this sheet to CDM Smith, ATTN: Matthew Horton, to verify receipt of this addendum. My email address is hortonmr@cdmsmith.com.

Sincerely,

Matthew R. Horton, PE
Project Engineer

Attachments: Addendum No. 3

VERIFICATION OF RECEIPT

NAME: _____

COMPANY: _____

DATE: _____





**CITY OF MERIDIAN, MS
PUBLIC WORKS DEPARTMENT**

9/25/2014

E-MAIL ADDENDUM NO. 3

**SOUTH WASTEWATER TREATMENT PLANT
PROCESS MECHANICAL AND ELECTRICAL UPGRADES**

The following revisions shall be incorporated in and take precedence over any conflicting part of the original Contract Document.

CONTRACT DOCUMENTS:

1. Section 00300, Bid Form

Delete page 00300-4 in its entirety and replace with attached 00300-4.A.

2. Section 15072 – Ductile Pipe and Fittings

In Paragraph 2.01.D, ADD the following:

“3. Ductile iron pipe and fittings not associated with the grit removal system shall have a cement mortar lining and asphaltic seal coat in accordance with AWWA C104.”

DELETE PARAGRAPH 2.01.F.2 in its entirety.

3. ADD attached Section 16950 – Electrical Systems Testing and Settings in its entirety to Division 16 of Contract Documents.

CONTRACT DRAWINGS:

1. Drawing MB-2 – 9 MGD Plant Primary Sludge Pump Modification Plan and Sections

In “SECTION 1”, CHANGE “4” CI” to “4” DI”.

2. Drawing MB 13 – 9 MGD Plant Main Air Piping Modifications Plan

ADD the following note:

“9. ALL NEW LPA PIPING AND FITTINGS SHALL BE SCHEDULE 10 CS, HOT DIPPED GALVANIZED, AND CONFORM TO ASTM A153.”

BASE BID

BID ITEM NO. 1 – Mobilization and Demobilization – Lump Sum Price

NUMBERS: \$ _____

WORDS: _____ Dollars

and _____ Cents

BID ITEM NO. 2 – Process Mechanical & Electrical Upgrades – Lump Sum Price

NUMBERS: \$ _____

WORDS: _____ Dollars

and _____ Cents

BID ITEM NO. 3 – Removal, Processing and Off-Site Disposal of Accumulated Solids in Digesters Allowance – Lump Sum Price

NUMBERS: \$ 150,000 _____

WORDS: One Hundred and Fifty Thousand _____ Dollars

and Zero _____ Cents

BID ITEM NO. 3A – Removal, Processing and Off-Site Disposal of Accumulated Solids in Aeration Basins and Clarifiers Allowance – Lump Sum Price

NUMBERS: \$ 20,000 _____

WORDS: Twenty Thousand _____ Dollars

and Zero _____ Cents

BID ITEM NO. 4 – Process Air and Water Piping Miscellaneous Correction Allowance – Lump Sum Price

NUMBERS: \$ 10,000.00 _____

WORDS: Ten Thousand _____ Dollars

and Zero _____ Cents

BID ITEM NO. 5 – 9 MGD Train RAS Pump Control Valve Actuator Correction Allowance – Lump Sum Price

NUMBERS: \$ 25,000.00 _____

WORDS: Twenty Five Thousand _____ Dollars

and Zero _____ Cents

TOTAL BASE BID:

NUMBERS: \$ _____

WORDS: _____ Dollars

and _____ Cents

SECTION 16950

ELECTRICAL SYSTEM TESTING AND SETTINGS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall engage the services of the equipment manufacturer as required for the purpose of performing inspections and tests as herein specified.
- B. The Contractor/manufacturer shall provide all material, equipment, labor, and technical supervision to perform such tests and inspections.
- C. It is the purpose of these tests to assure that all tested electrical equipment, both Contractor- and Owner-supplied, is operational and within industry and manufacturer's tolerances and is installed in accordance with design specifications. The tests and inspections shall determine suitability for energizing equipment.
- D. Test systems and equipment furnished under Division 16 and repair or replace all defective work and equipment at no additional cost to the Owner. Refer to the individual equipment sections for additional specific testing requirements.
- E. Make adjustments to the systems furnished under Division 16 and instruct the Owner's personnel in the proper operation of the systems.
- F. In addition to the specific testing requirements listed in the individual Sections, perform the additional testing, inspections and adjust settings as specified herein.
- G. Testing shall be scheduled and coordinated with the Construction Manager at least 2 weeks in advance.
- H. Provide qualified test personnel, instruments and test equipment.
- I. Provide a test report verifying compliance with the testing requirements included under Division 16.
- J. Before proceeding with the energization of equipment, notify the Owner to schedule the startup of the equipment.

1.02 RELATED WORK

- A. Electric motors are provided with the driven equipment under Divisions 11 and 15 and are specified in the individual equipment specification and Section 01171.

- B. Variable Frequency Drive units are provided with the driven equipment under Divisions 11 and 15 and are specified in the individual equipment specification and Section 16482.
- C. Control panels are provided with the driven equipment under Divisions 11 and 15 and are specified in the individual equipment specification and Section 01179.

1.03 SUBMITTALS

A. Test Report

1. The test report shall include the following:
 - a. Summary of project
 - b. Listing of equipment tested
 - c. Test results
 - d. Recommendations
 2. Furnish copies of the complete report to the Owner/Engineer's representative as directed in the contract documents.
- B. The report shall include a Table of Content and a data sheet for each component tested. The Table of Contents shall identify each component by a unique number. The Number shall appear on the technical data sheet for identification. Submit cable test results, grounding test results, circuit breaker, motor circuit protector, and protective device settings, fuse type and rating for each piece of equipment. Test report shall be submitted in a three-ring binder. Three copies shall be furnished.
- C. The report shall include a Table of Contents, a technical data sheet for each component (i.e., cable, circuit breaker, transformer, relay, etc.) tested. The Table of Contents shall include the name of each component, location, the major piece of equipment the component is located within, and a sheet number on which the technical information is presented. Each data sheet shall include a unique sheet number, the name of the component under test, the major piece of equipment in which the component is located and the weather conditions at the time of the test including the temperature and relative humidity at the time of the test. The firm doing the testing shall include in the report its opinion whether or not the equipment being tested complies with the specification and recommended measures to correct the deficiency. Any discrepancies shall be noted in the concluding summary of the report. Test report forms shall be in compliance with NETA standards. Three complete copies shall be provided. Reports shall be signed by the person in responsible charge of the field testing, an officer of the firm performing the tests and an officer of the Electrical Contracting Firm.
- D. The reports shall be submitted to the Engineer for review, comment and record purposes. Each report shall include a Table of Contents, a technical data sheet for each component (i.e., cable, circuit breaker, transformer, relay, etc.) tested. The Table of Contents shall

include the name of each component, the major piece equipment the component is located within, and a sheet number on which the technical information is presented. Each data sheet shall include a unique sheet number, the name of the component under test, the major piece of equipment in which the component is located, the weather conditions at the time of the test (i.e., temperature, humidity, sunny, rain, etc.), the tester's observation and findings, discrepancies, any remedial work performed or act to resolve problems, technical parameters obtained during the tests, as left settings of all devices, and a statement indicating the equipment is ready to be energized. The report shall contain a statement indicating the equipment was tested in accordance with the procedures outlined in the latest edition of The International Testing Association Acceptance Testing Specifications.

1.04 APPLICABLE CODES, STANDARDS, AND REFERENCES

A. All inspections and tests shall be in accordance with the following codes and standards except as provided otherwise herein:

1. National Electrical Manufacturer's Association - NEMA
2. American Society for Testing and Materials - ASTM
3. Institute of Electrical and Electronic Engineers - IEEE
4. InterNational Electrical Testing Association - NETA Acceptance Testing Specifications (ATS) – Latest Revision
5. American National Standards Institute - ANSI C2: National Electrical Safety Code
6. State and local codes and ordinances
7. Insulated Cable Engineers Association - ICEA
8. Association of Edison Illuminating Companies - AEIC
9. Occupational Safety and Health Administration - OSHA
10. National Fire Protection Association - NFPA
 - a. ANSI/NFPA 70: National Electrical Code
 - b. ANSI/NFPA 70B: Electrical Equipment Maintenance
 - c. NFPA 70E: Electrical Safety Requirements for Employee Workplaces
 - d. ANSI/NFPA 78: Lightning Protection Code
 - e. ANSI/NFPA 101: Life Safety Code

B. All inspections and tests shall utilize the following references:

1. Project design specifications
2. Project design drawings
3. Project short-circuit, coordination and arc flash study
4. Manufacturer's instruction manuals applicable to each particular apparatus
5. Project list of equipment to be inspected and tested

1.05 QUALITY ASSURANCE

A. Qualifications of testing firm

1. The testing firm shall be a corporately and financially independent testing organization which can function as an unbiased testing authority, professionally independent of the manufacturers, suppliers, and installers of equipment or systems evaluated by the testing firm.
2. The testing firm shall be regularly engaged in the testing of electrical equipment devices, installations, and systems.
3. The testing firm shall meet OSHA criteria for accreditation of testing laboratories, Title 29, Part 1907, or be a Full Member company of the InterNational Electrical Testing Association.
4. The lead, onsite, technical person shall be currently certified by the InterNational Electrical Testing Association (NETA) or National Institute for Certification in Engineering Technologies (NICET) in electrical power distribution system testing.
5. The testing firm shall utilize engineers and technicians who are regularly employed by the firm for testing services. Resumes of key staff proposed for the project shall be submitted to the Engineer for review.
6. The testing firm shall submit proof of the above qualifications with bid documents, when requested.
7. The terms used here within, such as test agency, test Firm, testing laboratory, or Contractor's test company shall be construed to mean the testing firm.

1.06 DIVISION OF RESPONSIBILITY

- A. The Contractor shall perform routine insulation-resistance, continuity, and rotation tests for all distribution and utilization equipment prior to and in addition to tests performed by the testing firm specified herein.
- B. The Contractor shall supply a suitable and stable source of electrical power to each test site. The testing firm shall specify the specific power requirements.
- C. The Contractor shall notify the testing firm when equipment becomes available for acceptance tests. Work shall be coordinated to expedite project scheduling.
- D. The project electrical engineer is responsible for obtaining and approving a short-circuit analysis and coordination study prepared by an independent testing firm or consulting engineer.
- E. The project electrical engineer shall supply a short-circuit analysis and coordination study, a protective device setting sheet, a complete set of electrical plans, specifications, and any pertinent change orders to the testing firm prior to commencement of testing.
- F. The testing firm shall notify the Owner/Engineer's representative prior to commencement of any testing.
- G. Any system, material, or workmanship which is found defective on the basis of acceptance tests shall be reported to the Owner/Engineer's representative.
- H. The testing firm shall maintain a written record of all tests and, upon completion of project, shall assemble and certify a final test report.
- I. Safety and Precautions
 1. Safety practices shall include, but are not limited to, the following requirements:
 - a. Occupational Safety and Health Act (OSHA)
 - b. Accident Prevention Manual for Industrial Operations, National Safety Council (NSC)
 - c. Applicable state and local safety operating procedures
 - d. Owner's safety practices (Lockout/Tagout)
 - e. National Fire Protection Association - NFPA 70E
 - f. National Fire Protection Association – NFPA 79
 - g. American National Standards for Personnel Protection
 2. All tests shall be performed with apparatus de-energized. Exceptions must be thoroughly reviewed to identify safety hazards and devise adequate safeguards.

3. The testing firm shall have a designated safety representative on the project to supervise the testing operations with respect to safety.

1.07 TEST EQUIPMENT REQUIREMENTS

A. Suitability of Test Equipment

1. All test equipment shall be in good mechanical and electrical condition.
2. Selection of metering equipment should be based on knowledge of the waveform of the variable being measured. Digital multi-meters may be average or RMS sensing and may include or exclude the dc component. When the variable contains harmonics or dc offset and, in general, any deviation from a pure sine wave, average sensing and average measuring RMS scaled meters may be misleading. Use of RMS measuring meters is recommended.
3. Field test metering used to check power system meter calibration must have an accuracy higher than that of the instrument being checked.
4. Accuracy of metering in test equipment shall be appropriate for the test being performed.
5. Wave shape and frequency of test equipment output waveforms shall be appropriate for the test and tested equipment.

B. Test Instrument Standards

1. All equipment used for testing and calibration procedures shall exhibit the following characteristics:
 - a. Maintained in good visual and mechanical condition
 - b. Maintained in safe operating condition
2. Test equipment should have operating accuracy equal to, or better than, the following limits:
 - a. Portable multi-meters should be true RMS measuring.
 - b. Multi-meters should have the following accuracy limits, or better:
 - 1) AC voltage ranges: .75% +/-3 last single digits @ 60 Hz
 - 2) AC current ranges: .90% +/-3 last single digits @ 60 Hz, including adapters, transducers

- 3) DC voltage ranges: .25% +/-1 last single digit
 - 4) DC current ranges: .75% +/-1 last single digit
 - 5) Resistance ranges: .50% +/-1 last single digit
 - 6) Frequency range: .10% +/-1 last single digit @ 60 Hz
- c. Clamp-on ammeters: ac current +/-3% of range +/-1 last single digit @ 60 Hz
- d. Dissipation/power factor field equipment
- 1) +/-0.1% power factor for power factor values up to 2.0%
 - 2) 5% of the reading for power factor values above 2.0%
- e. Low-range dc resistance equipment: 1.0% of reading, +/-2 last single digits
- f. Transformer turns ratio test equipment: 0.5% or better @ 60 Hz
- g. Ground electrode test equipment: +/-2% of range
- h. Insulation test sets: 0-1000V dc +/-20% of reading at mid-scale
- i. Electrical load survey equipment
- 1) +/-5% total error, including sensors
 - 2) 1% resolution
 - 3) Current transformers +/-2% of range @ 60 Hz
 - 4) Voltage transformers +/-0.5% of range @ 60 Hz
- j. Liquid dielectric strength test equipment: +/-2% of scale
- k. Infrared scanning equipment: sensitivity of 20c
- l. Phase shifting equipment: +/-1.0% over entire range
- m. High-current test equipment: +/-2% of range
- n. DC high potential test equipment: +/-2% of full scale
- o. AC high potential test equipment (60 Hz): +/-2% of full scale

C. Test Instrument Calibration

1. The testing firm shall have a calibration program which assures that all applicable test instruments are maintained within rated accuracy.
2. The accuracy shall be directly traceable to the National Institute of Standards and Technology.
3. Instruments shall be calibrated in accordance with the following frequency schedule:
 - a. Field instruments: 6 months maximum.
 - b. Laboratory instruments: 12 months.
 - c. Leased specialty equipment: 12 months (where accuracy is guaranteed by lessor).
 - d. Dated calibration labels shall be visible on all test equipment.
 - e. Records, which show date and results of instruments calibrated or tested, must be kept up to date and available upon request.
 - f. Up-to-date instrument calibration instructions and procedures shall be maintained for each test instrument.
 - g. Calibrating standard shall be of higher accuracy than that of the instrument tested.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 PREPARATION

- A. Testing shall be scheduled and coordinated with the Owner at least 2 weeks in advance.

3.02 ACCEPTANCE TESTING

- A. Tests all electrical equipment, both Contractor- and Owner-supplied, is operational and within industry and manufacturer's tolerances and is installed in accordance with design specifications prior to energizing equipment.
- B. Test systems and equipment furnished under Division 16 and repair or replace all defective work and equipment. Refer to the individual equipment sections for additional specific testing requirements.

- C. Make adjustments to the systems and instruct the Owner's personnel in the proper operation of the systems.
- D. Mechanical inspection, testing and settings of circuit breakers, protective relays, disconnect switches, motor starters, overload relays, control circuits and equipment for proper operation.
- E. Check and record the full load current draw of each motor. Where power factor correction capacitors are provided, the capacitor shall be in the circuit at the time of the measurement. Check Ampere rating of thermal overloads for motors and submit a typed record to the Engineer of the same, including MCC cubicle location and driven load designation, motor service factor, horsepower, and Code letter. If incorrectly sized thermal overloads are installed, replace same with the correct size overload.
- F. Check power and control power fuses for the correct type and ratings. Replace fuses if they are found to be of the incorrect size.
- G. Check settings of the motor circuit protectors. Adjust settings to lowest setting that will allow the motor to be started when under load conditions.
- H. Check motor nameplates for correct phase and voltage.
- I. Check rotation of motors prior to testing the driven load. Disconnect the driven equipment if damage could occur due to wrong rotation. If the rotation of the motor shaft is not correct, for the driven equipment, change the motor connections at the motor terminal box.
- J. Check interlocking, control and instrument wiring for each system and/or part of a system to prove that the system will function properly as indicated by control schematic and wiring diagrams.
- K. Inspect each piece of equipment in areas designated as HAZARDOUS to ensure that equipment of proper rating is installed. In the case where HAZARDOUS rated equipment is installed outdoors or in "WET" locations, verify that equipment furnished is also rated for use in WET locations and that conduit and equipment drains are provided. If equipment is not properly rated, advise the Owner.
- L. Verify proper phase sequence connection at transformers, equipment, and panels by producing a 1, 2, 3 / A, B, C phase rotation from left to right.
- M. Verify all circuit breaker ratings and settings are as required by the Contract Documents or as amended during shop drawing review. Advise the Engineer of discrepancies and make changes as directed by the Engineer.
- N. Verify proper operation of automatic and manual transfer switches, accessories devices and associated motor interlocks provided to either delay or prevent motor starting after transfer. Verify that the upstream protective device for each automatic and manual transfer switch is

of the proper type and rating to achieve the specified short-circuit withstand rating. If a specific upstream protective device is required to obtain the proper short circuit withstand rating, verify that the proper signage is installed on the upstream protective device and on the automatic/manual transfer switch enclosures indicating the proper replacement parts. If signage is not installed on both the upstream protective device and the transfer switch, advise the Owner and provide the signage as specified in the transfer switch specification section.

- O. Assist in the testing of the emergency/standby engine generator(s). The Electrical Contractor shall provide a journeymen electrician for the duration of the test to assist in the setup and operation of the emergency/standby engine generator(s) test(s).
- P. Verify grounding of instrumentation equipment and line surge protection equipment.
- Q. Test and calibrate protective relays and circuit breakers.
- R. Perform over potential, high potential, insulation resistance and shield continuity test for all medium voltage cables. Megger test all low voltage power system cable.
- S. Assist in performing a complete plant power outage test to will demonstrate that the automatic power transfer equipment, individual equipment programming and the plant's process control system reestablishes plant operations in the proper sequence once normal or standby power is established. The test shall be repeated until proper plant restoration is demonstrated.

END OF SECTION